Towards a Paradigm Shift in Economics?

A response to James K. Galbraith

Cyril HÉDOIN

Where will the revival of economic theory come from ? From the margins or from the center? In responding to James K. Galbraith's essay, Cyril Hédoin maintains that the center of economics already possesses innovative approaches that enable understanding of phenomena such as the financial crisis.

In his article « Who Are These Economists, Anyway ? », James K. Galbraith sets out to list the economists he believes were sufficiently clairvoyant to foretell the financial crisis. Galbraith argues that they are not found where expected, in other words at the heart of economics, but instead are located in the margins, or even altogether outside of academic economics.

As he tells his reader up front, Galbraith's list of economists is not exhaustive, and it clearly based in part on his own knowledge and his sense of the field. He jumbles together names like Dean Baker, Hyman Minsky, Wynne Godley and Gary Dimsky, figures of different intellectual origins but who, according to Galbraith, were all able to foresee the financial crisis (or in the case of Minsky, who died in 1996, to have provided theoretical tools for analyzing the mechanisms of financial instability). These authors also share the fact that they are not from the profession's center, from what has been called « the mainstream », or, more awkwardly, « neoclassical theory ». The basic framework of Galbraith's argument is that this reveals--or makes even more obvious--the fact that economics has been headed down the wrong path for years. He maintains that, as a consequence, it is important for the field to take advantage of the financial crisis to reorient itself, even if it means making a definitive break with conventional science. As Galbraith concludes, « It is therefore pointless to continue with

conversations centered on conventional economics. The urgent need is instead to expand the academic space and public visibility of ongoing work that is of actual value when faced with the many deep problems of economic life in our time. […] The point is not to argue endlessly with Tweedledum and Tweedledee. The point is to move past them toward the garden that must be out there, *that in fact is out there*, somewhere ».

Galbraith's position is interesting, and it no least among its merits is that it is constructive because he is attempting to ground himself in (while also showcasing) analyses that, although on the periphery of economics, are trying to offer alternatives to the dominant approach. As I will note later in my response, numerous economists have expressed dissatisfaction with the current state of the discipline, particularly with the field of macroeconomics. The best known--but by no means the only—of these critics is Paul Krugman (2009), a point on which I concur with Galbraith. Nevertheless, my point of view differs from his in that, while we agree that the science of economics is in need of change, we locate the seeds of this much-needed reorientation differently, and I maintain that internal evolution at the discipline's heart is more likely than a « scientific revolution » energized by the its margins.

A « systemic » crisis in economics

Paul Krugman is most emphatically not the sole economist to be troubled by the current situation in economics. In fact, on August 22, 2009, the economists Tim Besley and Peter Hennessy of the *London School of Economics* addressed a letter to the Queen of England to bring to her attention the « *a failure of the collective imagination of many bright people, both in this country and internationally, to understand the risks to the system as a whole* ». This explanation was not generally considered adequately specific and, a few days later, a second group of British economists addressed their own letter to the Queen to offer her their explanation how their discipline failed to cope with the crisis. Their criticism was overtly sharper and more specific in focusing on how economists are educated, which, in their view, contributed to training « *idiots-savants* » who learn to construct complicated mathematical models but have huge holes in their scientific culture. A final and perhaps more deadly salvo was launched in an article by a group of well-known economists, among them a number of significant figures in the development of « mainstream » economics (notably Alan Kirman and Michael Goldberg). The authors presented a profound critique of macroeconomics,

incapable in their view of integrating the latest developments in specific domains such as network analysis and complexity economics, domains which in principle would have enabled explanation, and above all prediction, of the financial crisis. Once again, the profession as a whole was targeted :

> « *We believe that economics has been trapped in a sub-optimal equilibrium in which much of its research efforts are not directed towards the most prevalent needs of society. Paradoxically self-reinforcing feedback effects within the profession may have led to the dominance of a paradigm that has no solid methodological basis and whose empirical performance is, to say the least, modest. Defining away the most prevalent economic problems of modern economies and failing to communicate the limitations and assumptions of its popular models, the economics profession bears some responsibility for the current crisis. It has failed in its duty to society to provide as much insight as possible into the workings of the economy and in providing warnings about the tools it created. It has also been reluctant to emphasize the limitations of its analysis. We believe that the failure to even envisage the current problems of the worldwide financial system and the inability of standard macro and finance models to provide any insight into ongoing events make a strong case for a major reorientation in these areas and a reconsideration of their basic premises* ».

However, the article primarily underscores the failure of economic science in not being able to integrate its own most recent developments in order to anticipate the financial crisis. This last point takes us in a different direction than do James Galbraith's arguments: Yes, economic science was led into failure by the 2008-2009 financial crisis, just as it was in 1929-1932, but where Galbraith sees salvation in the field's margins, other commentators instead see the heart of the dominant paradigm as having already initiated a revival. The opposition between these two perspectives is reminiscent of the debate on the nature of scientific thought that energized the philosophy of science in the 60's and 70's, particularly through the writings of Karl Popper and Thomas Kuhn[1]. In this respect, James Galbraith's text can be read as an appeal for a scientific revolution in the kuhnian sense. Indeed, all of the ingredients for revolution are present, including a dominant paradigm incapable of accounting

[1] In *Objective Knowledge* (1972), Karl Popper developed an evolutionary epistemology by transposing Darwinian mechanisms of natural selection and retention onto the evolution of scientific thought. Faithful to the maxim « *natura non facit saltum* », Popper saw the evolution of scientific thought as an incremental process, a « permanent revolution » as he termed it. This philosophy of science holds that scientific theories are transformed and selected in the course of a continuous process of conjecture and refutation, every falsified theory being progressively abandoned to be replaced by other, more robust theories. For Popper, there is no interruption in the evolution of science, but there is instead a continuous renewal that causes knowledge to grow progressively within society. Thomas Kuhn, on the other hand, is the creator of the celebrated concept of the « paradigm » that he described in his principal work, *The Structure of Scientific Revolutions* (1962). For Kuhn, in contrast with Popper, science evolves via breaks, indeed via *revolution*. The dynamics of science are not then incremental and Darwinian, but instead punctuated by the periodic radical overthrows through which scientists adopt a new way of thinking at intervals of at most a few decades.

for the most significant financial crisis in eighty years, an inability that reveals the inadequacy of the theoretical concepts and methodological perspectives of the economists who participate in conventional science. Most of all, to pursue Galbraith's thinking, there exist alternatives that can be substituted for the reigning paradigm. The stage seems set, then, for a true scientific revolution in economics.

Neoclassical theory is dead, long live the pluralistic mainstream ?

Nevertheless, Galbraith's argument is grounded in a selective and restrictive vision of recent theoretical developments within economic science as well on what might be described as a somewhat anachronistic view of the mainstream. He bases his argument on the opposition between, on the one hand, a dominant paradigm whose methodology primarily uses mathematical models, a paradigm that he sees as cohesive despite the internal debates common to every conventional science, and, on the other hand, a set of approaches from the margins or even outside economics that Galbraith thinks should now become discipline's new center. This characterization, however, ignores internal changes that have influenced and considerably altered the dominant paradigm for the past twenty-five years.

At the beginning of the 2000's, the historian of economic thought David Colander announced the demise of neoclassical economic theory (Colander, 2002), the school of thought born at the end of the nineteenth century that provided the basis for most of nearly a century of research in economics. Colander convincingly shows how the term « neoclassical », coined in the beginning of the twentieth centure and given new life by the debates of the 70's, ceased several decades ago to correspond to what economists really do. More recently, Colander and other thoughtful observers have underscored the transformation in economists theoretical perspectives, in particular the proliferation of new approaches that have been developed at the discipline's very core. David Colander, Richard Holt, and Barkley Rosser, Jr. (2004), discussing what they call « the changing face of the mainstream », note in particular the growing gap between, on the one hand, the effective practices in economists who often resort to new approaches like behavioral economics, evolutionary game theory, and complexity economics, and on the other hand, the the content taught in universities, which continues to be highly permeated by older theories and ideas. John B. Davis, Professor of economic philosophy at the University of Rotterdam, recently noted the emergence of a form of methodological pluralism within the mainstream's center (Davis, 2006). The new pluralism

takes as its point of departure the fact that certain theoretical and methodological principles previously deemed critical to any economic analysis, such as general equilibrium or the perfect rationality hypothesis, are now tending to be seen as optional. An increasing number of widely recognized studies have freed themselves of the restrictive hypotheses that at one time defined the neoclassical paradigm.

As some have noted, this change contradicts the kuhnian vision of the dynamics of science as a succession of revolutions. Instead, we are currently witnessing a process of internal reorganization that is causing the dominant paradigm to transform itself and ultimately to take a different shape or even to to become fragmented. This does not mean that the peripheral approaches have no role to play in the process. On the contrary, there is an established, stylized tendency in the history of economic thought for the dominant paradigm to integrate the ideas and contributions of rival theories and to be transformed by their influence. Which then leads to the thought that, like many other critical thinkers in economics, James Galbraith underestimates the changes that the disciplinary field is currently undergoing.

The future of economics

This section describes a few of the approaches that are contributing to the new face of economics, but the list is in no way intended to be exhaustive. One promising perspective is behavioral economics, which Galbraith mentions at the end of his article in passing only in order to disqualify it, showing an unjustifiable bias on his part. Launched in studies by authors such as Daniel Kahneman, recipient of the Nobel prize in Economics in 2002, and Richard Thaler, the field of behavioral economics has played a major role in raising questions about the traditional figure of *homo œconomicus.* Using controlled laboratory experiments, economists who adopt approach have been able to demonstrate certain behavioral tendencies (loss aversion for example) or preferences (such as the desire for equity) that lead actual behaviors to systematically contradict what standard analysis would have predicted. Rejecting behavioral economics is all the more questionable because it is directly relevant to financial economics and to an understanding of financial crises, as George Akerlof and Robert Shiller's recent work (2009) has illustrated. Reprising Keynes' famous formula, the authors argue that economic cycles (triggered, for example, by financial crises) originate in the « animal minds » of each individual. This term refers specifically to a certain number of behavioral tendencies that lead to excessive optimism during periods of euphoria, followed by excessive pessimism

during periods of crisis. In a broader sense, behavioral economics, particularly in Richard Thaler's work, provides a real alternative for financial economics to approaches based on the rational expectations and market efficiency hypotheses such as those developed over the past thirty years, particularly by the « Chicago school »[2]. *Homo œconomicus* has been unseated as the distinctive trademark of economics, and behavioral economics has contributed significantly to the beneficial effects of this change on our understanding of economic phenomena.

A second cluster of innovative studies has explored the role and evolution of institutions, defined as the norms, rules, and conventions that govern economic and social interactions. Although their significance was asserted by several economists beginning at the end of the nineteenth century, including Schmoller, Veblen, and Commons, systematic integration of institutions into economic analyses is relatively recent, having begin in the 1980's. Currently called institutional economics, this rapidly developing strand of research employs a wide array of methodological tools, and economists unanimously agree that institutions must be taken into account by any serious explanation of economic phenomena institutions. Intitutions play a particularly determinant role when asymmetries of information pertain (i.e., when one agent in an economic transaction holds more information than the other). There are, in fact, solid reasons to think that the financial crisis resulted in part from just such asymmetries, both between financial institutions and between financial institutions and regulatory authorities, as well as within financial institutions themselves. (It is worth asking, for example, how well bank administrators understood their traders' activities). In a similar vein, as early as 2005, Raghuram Rajan (Rajan, 2005) began calling attention to the systematic risks inherent in institutional changes that had affected the financial sector during the previous twenty years. Rajan demonstrated how certain perverse incentives created by regulations that govern the financial system created a non-negligeable risk of financial shock. The prophetic tenor of his conclusion is at least as compelling as the authors mentioned by Galbraith :

> « *Given the possibility of perverse incentives coming together in some states, a risk management approach to financial regulation will be important to attempt to stave off such states through the judicious operation of monetary policy and through macro-prudential measures. […] We should be prepared for the low probability but highly costly downturn. In*

[2] For an excellent and readable perspective on debates on the market efficiency hypothesis and the contributions of behavioural economics, the reader is referred to Justin Fox's recent work (2009).

such an eventuality, it is possible that the losses that emanate from a financial catastrophe cannot be entirely borne by current generations and are best shared with future generations».

Like Cassandra, though, Rajan's warnings were not really taken seriously, despite the fact that their author is a member of the discipline's mainstream. Enhancing, In recent years Rajan's exploration of financial issues have been enhanced by the emergence of studies that attempt to apply formal models of game theory to historical case studies. Their goal to analyze the significance and origins of specific features of the different world economies[3]. A growing number of studies also use models derived from evolutionary game theory (see box below) in their analyses, an approach originally imported from the field of biology. The purpose of this research strand is to better understand how individuals with limited rationality can learn from past interactions and adapt their behavior accordingly.

These models also allow better definition of the mechanisms that govern the evolution of institutions. One of the singular merits of such models when compared to the neoclassical methods of the past century is to show that there is not necessarily a unique, optimal equilibrium, and also that inefficient instutions can lastingly afflict economies. Without question, institutional economics is now in a position to contribute to an understanding of the positive and negative effects that some institutions such as, for example, prudential regulation of financial markets, have on economies, as well as allowing their trajectories to be tracked over time.

Evolutionary game theory

Evolutionary game theory is a mathematical tool first developped in the 1940's whose purpose is to enable the study of strategic interactions that imply rational agents. Initially applied primarily to international conflicts in the context of the Cold War, game theory has subsequently been used to study a variety of phenomena in economics, including negotiation processes, corporate strategy, and problems of reputation.
Evolutionary game theory was developed for the most part independently by biologists (Maynard Smith, 1982) beginning in the 1960's and 1970's. It is quite distinct from classical game theory and was initially developed for the study of animal behavior and for modeling the mechanisms of selection and mutation as advanced by Darwin. The hypothesis of the perfect rationality of agents is not applied in evolutionary game theory models, agents being assumed to behave according to highly simple and completely non-optimizing rules. These models enable investigation of the mechanisms through which a behavior or phenotypic trait is distributed within a particular population. Beginning in the 1980's, evolutionary game theory has been widely used by economists in studies of individual learning mechanisms and

[3] See in particular Avner Greif's stirring analyses (2006) of institutions within European and North African economies during the Middle Ages.

to explain the evolution of conventions and social norms.

A final group of developments that deserves mention is sometimes called « complexity economics ». Like the trends discussed previously, this theoretical orientation began with the importation of techniques and methodological tools from other social and natural sciences. Studies that apply complexity are primarily based on computer simulations that seek to describe the systematic outcomes of decentralized individual behaviors. The advantage of this form of modeling is that it permits the study of non-linear dynamics that are rather difficult to study using traditional economic models.

The models used in such studies do not assume perfectly rational agents, who are assumed instead to act according to more or less simple rules of behavior. The processing power of contemporary computers enables the construction of more realistic models that are able to model heterogeneous populations whose agents exhibit highly diverse preferences and behavior rules. The dynamics of the resulting systems are often complex and unpredictable due to the existence of cumulative processes induced by retroactive loops. As previously mentioned, complexity economics is very useful in accounting for the emergence of institutions and the dynamics of individual behaviors. It is also directly relevant, though, to the study of macroeconomic and financial phenomena. For example, the work of Hyman Minsky (whom Galbraith mentions in his article) has been made considerably more robust through his application of complexity economics (Gallegati, Palestrini, and Rosser, Jr., 2010). This has enabled formal specification of the conditions under which Minsky was able to verify the financial instability hypothesis. Network analysis, another outgrowth of complexity economics, allows better assessment of the importance of interconnections between actors within the financial system (Allen and Babus, 2008). A particular strength of this approach is that it provides an analytic framework for revealing the mechanisms concealed within the expression « too big to fail ». A network's stability can in fact be considerably endangered when its stability is centered around a few nodes (actors), and the disappearance of one overly-important actor can cause systemic effects with potentially grave consequences. A better understanding of these mechanisms could allow the development of more appropriate legislation that specifically targets prevention of individual, overly-important actors to occur. At present, the Santa Fe Institute, a center for interdisciplinary research, is the primary site

where these kinds of studies have been conducted, but are becoming more widespread in the field of economics[4].

The three sets of approaches mentioned above all stem from the core of economics, but that does not mean that they are either completely mature or as recognized as they deserve to be ; their further development and integration into the field are thus incomplete. Indeed, the article by Kirman et al. cited earlier specifically criticizes the inability of economics to adopt network analysis and complexity economics. There is considerable debate about the findings of behavioral economics, however, and institutional economics faces internal debates. Some criticisms have been leveled at studies that try to link game theory models to historical case studies confirm that the field of economics is not yet entirely open to methodological alternatives. Furthermore, evolutionary game theory is sometimes applied to mathematical exercises of doubtful empirical relevance that are inconsistent with the theory's original empiricist sources[5]. Still, these different approaches are being debated within the very heart of conventional science, and articles that apply them are being published in the most prominent academic journals. Above all, they are directly relevant to efforts to understand and explain a real economic phenomenon such as a financial crisis.

Conclusion

Galbraith and I, as well as many other economists, agree on one point : Last year's financial crisis revealed the inability of certain sub-fields of economics (basically macroeconomics and financial economics) to explain significant emprical phenomena. The causes of this failure are probably many, and we are left to determine where the field needs to turn as a consequence of it. In his article, James Galbraith suggests looking to the margins of the discipline, contending that the time to unleash a veritable scientific revolution has arrived. I do not mean to question the incontestable merits of the approaches that Galbraith has reviewed, but his argument does not take recent transformations within the field of economics into account.

[4] The *Journal of Economic Behavior and Organization*, a well-reputed academic journal, publishes numerous studies that apply complexity economics.

[5] See Robert Sugden (2001).

As others have noted before me, the elements of what still consituted the dominant paradigm of thirty years ago is presently fragmented into a number of approaches that are more or less ompatible with each other. The current evolution of the field of economics appears to contradict Kuhn's argument that science necessarily evolves through revolutions. There are today recognized theoretical approaches at least partly situated within the mainstream of economics that possess real explanatory power to analyze a phenomenon like the financial crisis. This article has discussed three of these approaches : behavioral economics, institutional economics, and complexity economics. The way in which economics is currently being taught is probably more out of step with recent developments than is current research. There is a degree of concensus that teaching is excessively focused on technique and not enough on content ; the necessary next step is without doubt for teaching to better incorporate the discipline's most recent developments.

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Further Reading

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